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A REDESCRIPTION OF *HEMIPENTHES BIGRADATA* (LOEW) (DIPTERA: BOMBYLIIDAE) FROM THE BAHAMA ISLANDS

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Abstract.—*Hemipenthes bigradata* (Loew) is redescribed and illustrated. Notes are given on its description.

While collecting asilids and bombyliids on the island of San Salvador in the Bahamas, we found about 100 specimens of a species of a bee fly that we tentatively identified as *Hemipenthes bigradata* (Loew). The San Salvador specimens differ in several significant characters from the original description of *H. bigradata* (Loew, 1869). Recently we examined Loew's holotype (labeled *bigradata,* Loew, m, type 12665 MCZ, 304; it is incorrectly labeled a male). Although the holotype is in poor condition (greased, tomentum badly rubbed, apical two-thirds of left wing absent), we found it to be the same species as that collected on San Salvador. Loew's description is too brief, unclear in some aspects, and fails to mention certain important diagnostic characters. For example, foretibial bristles are present; the tomentum of tergite 4 has a dense layer of yellow scales that is partially covered by white ones, thus the scales are not wholly white as indicated in the description; and the pile on the lateral margin of the thorax is almost wholly white rather than yellow. Coquillett's (1887) description of *H. bigradata* further confuses matters since he apparently described a different species (personal communication, J. C. Hall). A more complete description of *H. bigradata* is presented below. The description is based upon a male and female taken from the series collected on San Salvador. The specimens are labeled homotypes.

Hemipenthes bigradata (Loew)

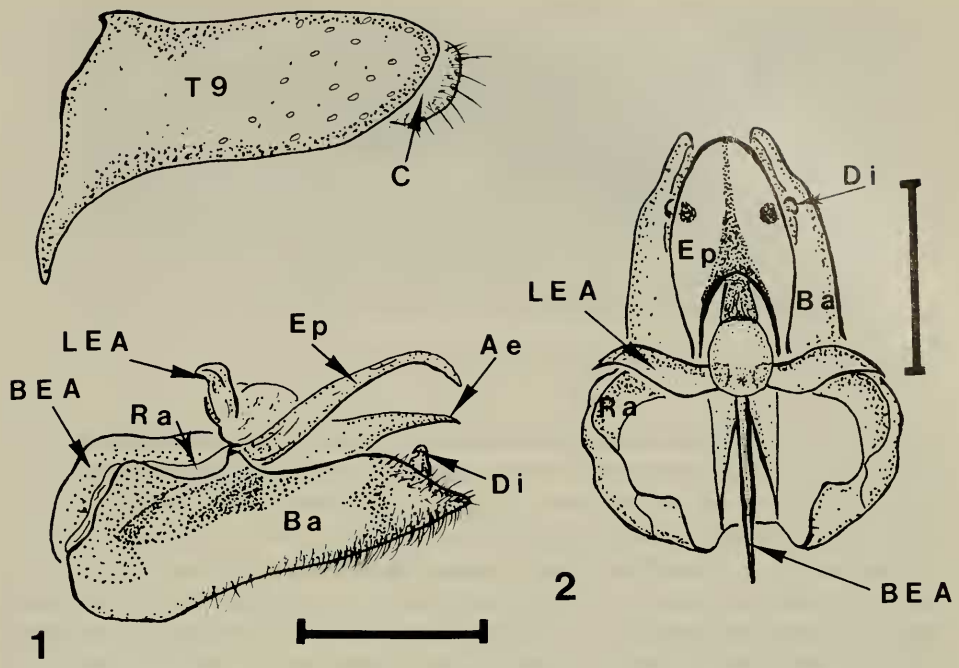
Figs. 1, 2

Anthrax bigradata Loew, 1969: 23; "Cuba." Holotype ♀ in the Museum of Comparative Zoology. Coquillett, 1887: 162, 174 (not in the sense of Loew's *bigradata*); Johnson, 1908: 72.

Villa (*Hemipenthes*) *bigradata*: Painter and Painter, 1962: 84; 1965: 435; Hull, 1973: 385; Painter et al., 1978: 47.

Diagnosis.—*Hemipenthes bigradata* is easily recognized by its dark body, abundant dark scales on the front and usually on the legs, white pile and dark scale pattern on tergite 1, yellow scales partially overlaid by white ones on tergite 4, a few dark bristles on the foretibia, distinct light spots in the dark color of the wing, and by the genitalia.

It is similar to *H. floridana* (Macquart) but is easily distinguished from the



Figs. 1, 2. Genitalia of *Hemipenthes bigradata*. 1. Lateral view. 2. Gonopods and ejaculatory process, dorsal view. Abbreviations: Ae = aedeagus, Ba = basistylus, BEA = basal ejaculatory apodeme, Ce = cercus, Di = dististylus, Ep = epiphallus, LEA = lateral ejaculatory apodeme, Ra = ramus, T = tergite. Horizontal and vertical bars = 0.25 mm.

latter by the absence of reddish pile on the abdomen. In Coquillett's (1894) key, *H. bigradata* may be forced to *H. eumenes* (Osten Sacken) but can be distinguished from it by differences in vestiture, absence of pulvilli and lighter spots in the dark areas of the wing.

Male.—5.5 mm. Ground color brownish black; antenna dark, 3rd segment slightly lighter; sides of tergites 2–3 with somewhat lighter area, more distinct on 3; pleura, coxae and legs brown, tibiae and apices of femora lighter, tarsi darker apically.

Face rounded, slightly projecting below; proboscis not projecting beyond oral margin; hairs of head black, more abundant at midline of face, on oral margin and on 1st antennal segment. Scales primarily black on front and yellowish white to yellowish brown elsewhere, lighter scales most abundant on face and behind indentation of eye; occipital fringe brownish black. Antennal ratio 1.6:1:5.1, 3rd segment somewhat onion shaped at base, style beginning abruptly.

Mesonotum with black hair, longer posteriorly, black scales on dorsum with scattered cupreous scales, most abundant on posetrior 5th, stripes of dense long whitish scales beginning on humeral callus extending onto postular callus, margined above along most of its length by long cupreous scales. Ruff brown, primarily lighter above, darker below, whitish hairs at anterior corner of mesonotum contiguous with stripe of white scales. Pleura with mostly black pile, the latter denser and longer on upper mesopleuron, hypopleuron bare, metapleuron with primarily

Fig. 3. Wing of *Hemipenthes bigradata*, 5.2 mm.

whitish pile, sparse, short dark pile elsewhere, sparse cupreous scales on lower meso-, ptero- and sternopleurae. Scutellum with black hair, predominantly cupreous scales, a patch of black scales basally in center; scutellar and postalar bristles black; pre-alar bristles orange.

Abdomen with coarse black hair reaching lateral margin, more noticeable on sides of tergites 2–7, denser on 3rd and apical ½ of 2nd tergites. Tergite 1 with long cupreous scales apically, a few shorter brown scales mixed at midline, abundant erect whitish hair laterally tapering into a narrow row toward center, a few dark slender brownish-black hairs medially. Tergites 2–3 with black and a few scattered cupreous or yellowish scales, patches of whitish scales and hairs toward side basally on tergite 2. Tergite 4 with a wide basal band of yellowish scales overlaid with white scales, black scales apically. Tergites 5–7 with decreasing proportion of black scales, light scales yellowish to white, a small patch of white scales basolaterally on 7; lateral margins of tergites 2–7 with brownish scales, a few lighter ones mixed. Venter with black hair, sternite 1 with few scales, more abundant posteriorly, scales predominantly brown, lighter or lighter tipped ones scattered.

Genitalia with tergite 9 longer than high, slightly tapered and rounded apically, base with black hair. Epiphallus about 2× as long as wide, broadly rounded and somewhat recurved apically; aedeagus almost straight, tapered to a point, reaching apical margin of epiphallus, basal ejaculatory apodeme somewhat C-shaped with 2 strong long, lateral aedeagal apodemes, lateral ejaculatory apodemes winglike, equal in length to lateral aedeagal apodemes; base of aedeagus ovate, slightly bulging dorsally; basistylus triangular in lateral view, broad base tapering to a narrow rounded apex, weak, short brown to yellowish hairs below and apically; dististylus small, moderately hooded at apex.

Coxae with black hair and coppery to brown scales; legs with abundant dark brown scales, scattered lighter scales most abundant on mid- and hindlegs, sparse on foretibia; bristles black, present on foretibia; pulvilli absent.

Wing with anterior and basal halves brownish black, the dark pattern extending from near tip of subcosta transversely across marginal cell basally, then transversely to vein M, basally beyond r-m crossvein, then at about a 45° angle to meet wing margin near apical ⅓ of axillary cell. Dark areas include basal ⅓ of discal, extreme base of 3rd posterior, basal ¼ of 4th posterior and basal ⅔ of anal and

axillary cells. Prominent pale spots in brownish black area on knee of R_{2+3}, r-m crossvein, basal portion of m crossvein, anterior branch of cubitus, and near base of Rs; black spot before proximal end of discal cell. First posterior cell open more than length of r-m crossvein; anal cell open about ½ or more length of r-m crossvein; discal cell long and narrow, pointed apically, basally at its narrowest point about as wide as length of r-m crossvein; r-m crossvein arising slightly before middle of discal cell; R_{2+3} arising slightly before r-m crossvein; contact of discal and fourth posterior cells less than width of base of 4th posterior cell. Base of costa with black scales and setae; alular and squamal fringes light brownish black. Halter brownish white, basal ½ of knob brownish black.

Female.—Similar to male with the following exceptions: 5.8 mm; antennal ratio 1.8:1.0:5.5. Ground color of antenna uniformly dark, light areas on sides of tergites 2–3 less distinct; 1 or 2 whitish scales on hind coxa. A few light scales at base of costa, contact of discal and fourth posterior cells equal to or more than base of 4th posterior cell, base of M_3 curved upward basally in right wing.

Variation.—Male 4.5–9.4 mm, female 4.4–8.1 mm; antennal ratios: male 1.5: 1:5–2:1:5, female 2.5:1:7.5–2.7:1:7.3. Ground color of femora, calli and antenna brownish black to yellowish brown, size and intensity of light areas of tergites highly variable, often indistinct; occasionally light area on tergite 4, usually in male, abdominal tergites of male frequently with light lateral margins, sometimes extending almost or completely across apical margins on posterior tergites. Occiput frequently with dark scales below; scales often dark basally and lighter apically; sometimes scales on mesonotum predominately cupreous. Two females have abundant light brown scales on apical margin of tergite 7. Bristles occasionally brownish orange to orange, prealar bristles rarely black. Pale spot at base of 3rd posterior cell sometimes absent; R_{2+3} often arising slightly beyond r-m crossvein, apex of discal cell rarely truncate, additional veins common, usually in discal cell, and an occasional spur vein present; anal cell sometimes open less than ½ length of r-m crossvein.

Material Examined.—99 specimens; 45 ♂, 54 ♀ San Salvador Island. 2 ♂ Grand Bahama Island. 1 ♂ Cat Island. 2 ♂, ♀ Great Exuma Island. The homotypes (♂, ♀) are deposited in the collection of the National Museum of Natural History. Specimens are also deposited in the following museums: Museum of Comparative Zoology, American Museum of Natural History, National Museum of Natural History, and Museum of Zoology, Towson State University.

Distribution.—Bahama Islands (Abaco, Bimini, Cat, Grand Bahama, Great Exuma, Nassau, San Salvador, Strangers Cay), Cuba. *Hemipenthes bigradata* is also recorded (Painter and Painter, 1962) from Northern California and New Mexico, but specimens from those regions that we have examined are significantly different to warrant re-evaluation of their status. *Hemipenthes bigradata* has been collected in the Bahamas from January through June.

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